U, where the straightedge cuts the line of sines, is the eccentric anomaly sought. In this instance U reads 150° *quam proxime*, but probably not exactly. Whatever the reading is, it can be treated in the usual way as a close approximate solution; and from it exactness to any amount of precision may be obtained by the application of the differential formula above. It will be observed that the only novelty here claimed consists in the application of the slider in the groove, thus obviating any drawing of parallel lines; and in the adaptation of the small scale EF, thus furnishing an immediate means of placing the straightedge at the proper inclination to the base ACB required by the eccentricity *e*.

This machine admits of home manufacture: and either of the two solves the question of Kepler's Problem with sufficient accuracy for double-star orbits without further computation.

The demonstration is obvious. For

$$\mathrm{M}u = \mathrm{U}u.\cot \mathrm{DGE} = \frac{\mathrm{GE}}{\mathrm{ED}}\cdot \mathrm{U}u = e \sin \mathrm{A}u;$$

hence

$$\mathrm{A}u = \mathrm{AM} + \mathrm{M}u = \mathrm{M} + e \sin \mathrm{A}u.$$

that is

$$e\mathrm{U} = \mathrm{M} + e \sin \mathrm{U}.$$

On the Inequality in the Moon's Longitude discovered by Prof. Newcomb. By E. Neison, Esq.

In my communication to the Society entitled "On the Lunar Perturbations arising from the Planet *Jupiter*" (*Monthly Notices*, xxxvii p.248), reference was made to a new periodical term in the Moon's Longitude of the form

$$\delta v = -1''{\cdot}163 \sin\{(2 - 2m_1 - c)\, nt + f - 2f_1 + \mathrm{A}\},$$

where $(nt + f)$ denotes the mean longitude of the Moon, $(cnt + f - \mathrm{A})$ is the mean anomaly of the Moon, and $(m_1 nt + f_1)$ represents the mean longitude of *Jupiter*. Reducing the argument of this term to a form depending on the mean anomaly of the Moon $(=g)$ and a term increasing directly with the time, it becomes

$$\delta v = -1''{\cdot}163 \sin\{g + 20^\circ{\cdot}85\, (\mathrm{Y} - 1855{\cdot}76)\},$$

or, what is the same thing,

$$\delta v = +1''{\cdot}163 \sin\{g + 20^\circ{\cdot}85\, (\mathrm{Y} - 1864{\cdot}4)\}.$$

In his communication to the Society, "On a hitherto unnoticed Inequality in the Longitude of the Moon" (*Monthly Notices*, June 1876, p. 358), Prof. Newcomb describes a new empirical term discovered by himself, and which is

$$\delta v = -1''{\cdot}5 \sin\{g + \mathrm{N}^\circ - 90^\circ\},$$

where

$$N = 163^\circ{\cdot}2 + 21^\circ{\cdot}6\,(t - 1868{\cdot}5).$$

Reducing this to the same form as the theoretical term, it becomes

$$\delta v = -1''{\cdot}5 \sin\{g + 21^\circ{\cdot}6\,(Y - 1865{\cdot}1)\}.$$

The two terms are therefore identical, with the exception of Prof. Newcomb's empirical term having the greater coefficient.

This fact entirely confirms the discovery made by Prof. Newcomb, and is obviously entirely unaffected by the existence of any discrepancy between the corrections to Hansen's Tables deduced by Prof. Newcomb and the observed corrections such as Capt. Tupman has made out.

Owing to an accidental error, which has just been detected, towards the end of the numerical reduction of the analytical results, the values of the co-efficients of the inequalities due to *Jupiter* given in the March number of the *Monthly Notices* are not quite accurate. They should be

$$\begin{aligned}\delta\frac{1}{r} = &-0''{\cdot}578 \cos\{(2-2m_1-\ c)\,nt + f - 2f_1 + \ A\}\\ &-0''{\cdot}003 \cos\{(2-2m_1-2c)\,nt \quad - 2f_1 + 2A\},\end{aligned}$$

and

$$\begin{aligned}\delta v = &-1''{\cdot}163 \sin\{(2-2m_1-\ c)\,nt + f - 2f_1 + \ A\}\\ &+2''{\cdot}200 \sin\{(2-2m_1-2c)\,nt \quad - 2f_1 + 2A\}.\end{aligned}$$

Comet 1877, II., discovered by Professor Winnecke April 5.

(*Extract of a Letter from Prof. Winnecke to Mr. Hind*).

"The new Comet was observed here by me on April 5, 6, and 7. From these observations Herr Hartwig has calculated the orbital elements:—

T	April 18·1741 Berlin Time.			
	°	′	″	
$\pi - \Omega$	65	51	21	
Ω	317	51	18	(1877·0)
i	123	17	18	
$\log q$	9·96767			

For the middle observation $\Delta\lambda = +\ 2''{\cdot}0$, $\Delta\beta = -\ 10'{\cdot}0$ (C—O).

"From these elements Dr. Schur has deduced the following Ephemeris:—